

Web 3.0: the Next Step for the Internet

by Michael Baumann

Everyone remembers about 5 years ago when sites such as Wikipedia started popping up, and we started hearing the new catchphrase of "Web 2.0" being tossed around. That's all old news. Now there's a new and more ephemeral buzzword: Web 3.0.

Now that we finally have a handle on Web 2.0, what does Web 3.0 mean? "Web 3.0 is the third decade of the Web, so it's a period in time; it's not a technology," says Nova Spivack, founder and CEO of Radar Networks.

March 2009 marked the 20th anniversary of "Information Management: A Proposal," a seminal publication by Tim Berners-Lee that marked the beginnings of the internet as we know it, according to most internet experts. Two decades later, the web is going through a new series of evolutions that the average user might have barely noticed, but it could revolutionize the way we use computers.

A Changing Infrastructure

While Web 2.0 saw a revolution in the democratization of the internet, Spivack says Web 3.0 will usher in a revolution in the construction of the internet itself. "In the third decade of the Web, the focus is going back to the back end and we're focusing on upgrading the infrastructure of the Web again," says Spivack.

One of the reasons Web 2.0 received so much attention is that its technologies drastically changed the way the average person connects with the internet, changing everyday users from readers to contributors. The focus of Web 3.0 will be different.

"The big theme of Web 3.0 is to make the Web more understandable to software, whereas Web 2.0 was about making the Web understandable to people," Spivack says. "The user interface is what we've developed so far. I don't think we'll have some huge radical new interface." Spivack points to semantics and natural language search as two ways that individual web applications will get smarter and easier to use.

"When an application sees a page on the Web today it doesn't really know what to do with it," Spivack says. "But as we add more of this open standard metadata to the Web, it makes the Web machine understandable. Also, as applications get smarter because they can understand language and know what words mean, that also adds meaning and structure to the Web."

Reaching a Pivotal Point

R. David Lankes, director of the Information Institute of Syracuse and an associate professor in Syracuse University's School of Information Studies, also sees the internet's 20th anniversary as a turning point.

"What we're getting to is that point in the industrial revolution where people figured out that if you make the parts from machines interchangeable, you change the world," says Lankes.

Most of the Web 3.0 technologies are designed to improve the efficiency of data storage and correlation. In 10 years' time, many of the search and compilation functions now done by users will be done automatically. Spivack speculates that by that time, users won't have to bother with sorting through data, from compiling wikis to deleting spam emails. "All of these problems are causing people to spend inordinate amounts of time doing menial tasks that should be done by machines," says Spivack.

This revolution might not have taken place if not for an essential paradigm shift for programmers, according to Lankes, who started out as a semantic web skeptic. "What I'm finding is that the original Utopian vision of being able to come up with these massive ontologies and descriptions of every possible relationship a thing could have to another thing - I think that's died away and what's replaced it has just been the pragmatic and really effective use of structured data," says Lankes.

Building on the Existing Foundation

The original conception of Web 3.0 would have required a complete overhaul of the internet's software architecture, with specific standards for metadata and language. Now, programmers are simply building on the existing programming.

"If you look at what Google does with this inherent structure of links - this links to that - which is frankly really dumb in the sense that it's not very sophisticated, you can see the amazing effect that they've had with a very simple approach," says Lankes. "But if you begin to add just a little more effort to talk about what those links are like, you get a lot of benefit without having to go into this extreme of We're all going to agree on this metadata scheme and these standards."

Even if the new technologies are more subtle from a user standpoint, there's a buzz brewing in computing circles about Web 3.0. Businesses are seeing semantic programming and metadata as a way to increase efficiency.

"At all levels, from commercial enterprises to educational institutions to government, I think institutions are looking at the informational problems they have, both with their internal information and getting more access to the Web at large," says Spivack.

Academics are also getting excited about this new evolution. "I think that [academia] is where a lot of the interest is," Lankes says. "You've got folks from the information side and library science side and even in the computer science side - in the information retrieval world in particular - looking at how semantic applications ... can be used to improve performance and products in systems."

More Use on the Semantic Web

Users can already begin to see the vanguard of Web 3.0 technology popping up all over the place, particularly the semantic web. "Semantic is just a fancy word for ... bringing data together in a quick and easy way," says Lankes. Examples of popular sites using semantic technology include Google Maps and YouTube.

"Does this mean that people won't still go to Britney Spears' Web site to see what she's doing? No, they can," says Lankes. "But they can also go in there and take the titles of her albums and see how many of her songs were remakes, then show me the originals and every other variation of that song with three clicks. That's the big change."

Lankes says one of the biggest ways Web 3.0 will affect casual users is that it will make surfing less complex. "When you see a video on a Web page, very rarely is that video - these days - hosted by the Web site," says Lankes. "It's usually sitting on YouTube or blip.tv or something else. The old way would be: I put a video on YouTube. Here's the URL. Click. Watch video. Now, here it is. And even though to the user it's seamless, it looks like that video is on the Web site, in truth what's happening on the back end is it's coming out of one server, into another server and it's going to the user in a seamless way."

Semantic and Social Search

Spivack thinks that web applications and services using Web 3.0 technology will begin to pop up more frequently and quickly as time goes on. "I think this is the year that a lot of these parts will start to appear," says Spivack. He points to Metaweb's Freebase, an online information center structured mostly on metadata, using data mining in concert with more conventional means of harvesting information, such as individual wiki posts.

Spivack is also optimistic about Twine, a product of his own company, Radar Networks. "We're seeing semantic search, semantic ad targeting," says Spivack. "We're starting to see these semantic encyclopedias, if you will, like Freebase. Services like Twine are semantic social search. We're combining the semantic with the social to create a better experience for users to track their interests."

All in all, Web 3.0 technologies will create smarter, more-efficient web programs that could drastically reduce the time it takes to compile and post information to the internet and the time it takes users to search for it once it's there. The key for Web 3.0 is efficiency.

"We've moved from a Web that points to a Web that plugs into itself [to one where] we can now embed data and mingle data together," says Lankes. "And we're getting to the point where those applications are getting smarter and smarter."

While Web 3.0 will most likely not bring us the new YouTube, everyone from librarians to businesses to everyday users can count on the new internet working faster, smarter, and more efficiently.

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